SOLAR OBSERVATIONS

SOLAR AND SKY RADIATION MEASUREMENTS DURING MAY, 1927

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For a description of instruments and exposures and an account of the method of obtaining and reducing the measurements, the reader is referred to the REVIEW for January, 1924, **52**: 42, January, 1925, **53**: 29, and July, 1925, **53**: 318.

From Table 1 it is seen that solar-radiation intensities averaged above the May normals at all three stations. At Washington a noon intensity of 1.45 gram-calories per minute per square centimeter obtained on the 27th equals the highest noon intensity heretofore obtained at that station in May.

Table 2 shows a deficiency in the total solar radiation received on a horizontal surface from the sun and sky at all three stations for which normals have been determined. The deficiency is pronounced at Washington and Madison and is due to unusually cloudy conditions.

Skylight-polarization measurements were mad at Washington on only one day, May 27, and the percentage was 56, which is only slightly above the mean for May at that station. At Madison measurements obtained on five days give a mean of 57 per cent with a maximum of 64 per cent on the 12th. These are only slightly below the corresponding averages for May at Madison.

TABLE 1.—*Solar radiation intensities during May, 1927*

[Gram-calories per minute per squre centimeter of normal surface]

Date	Sun's zenith distance										
	8 a. m.	78.7°	75.7°	70.7°	60.0°	0.0°	60.0°	70.7°	75.7°	78.7°	Noon
	75th mer. time	Air mass									Local mean solar time
		A. M.					P. M.				
	e.	5.0	4.0	3.0	2.0	[1] 1.0	2.0	3.0	4.0	5.0	e.
	mm.	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*mm.*
Washington, D. C.											
May 2	6.50	0.62	0.74	0.92	1.07	1.18					5.36
May 5	11.38					1.27					10.21
May 11	13.61					1.26					9.83
May 20	10.97					1.34	1.10				9.83
May 27	6.27	0.68	0.82	0.98	1.20	1.45					5.79
Means		(0.65)	(0.78)	(0.95)	(1.14)	1.30	(1.10)				
Departures		+0.02	+0.07	+0.13	+0.15	+0.02	+0.11				
Madison, Wis.											
May 5	6.02				1.20						5.16
May 12	4.95				1.26	1.45					4.57
May 16	4.17				1.20	1.45					3.15
May 17	6.02					1.25					10.97
May 18	5.36					1.39					6.76
May 21	12.68					1.31					14.60
May 25	7.04				1.14						7.87
May 26	8.18					1.45					6.76
Means					1.20	1.38					
Departures					+0.09	+0.02					
Lincoln, Nebr.											
May 11	4.57		1.00	1.13	1.30	1.54	1.21	1.02	0.90		3.81
May 13	8.48				1.25						7.29
May 14	6.02			1.08	1.26	1.50					4.37
May 23	13.61							1.05	0.92		12.68
May 25	9.83		0.86	1.02	1.22	1.44					6.50
May 26	8.18		0.84	1.02	1.20	1.44					8.48
May 30	7.57					1.29	1.05	0.85	0.71	0.60	8.81
Means			0.90	1.06	1.25	1.40	(1.13)	0.97	0.84	(0.60)	
Departures			+0.09	+0.11	+0.11	+0.01	+0.03	+0.04	+0.05	−0.12	

[1] Extrapolated.

TABLE 2.—*Solar and sky radiation received on a horizontal surface*

[Gram-calories per square centimeter of horizontal surface]

Week beginning—	Average daily radiation						Average daily departure from normal		
	Washington	Madison	Lincoln	Chicago	New York	Twin Falls	Washington	Madison	Lincoln
1927									
Apr. 30	417	473	484	333	304	[1] 616	−33	−23	−7
May 7	346	338	415	261	307	515	−106	−122	−51
May 14	375	430	551	261	343	634	−92	−47	+27
May 21	443	366	592	343	296	[2]	−43	−112	+51
May 28	370	298	438	366	527	[2]	−122	−181	−76
Deficiency since first of year on June 3							−7,602	−6,048	−6,090

[1] Five-day mean. [2] Main-spring of register clock broken.

POSITIONS AND AREAS OF SUN SPOTS

[Communicated by Capt. Edwin T. Pollock, Superintendent U. S. Naval Observatory]

[Data furnished by Naval Observatory, in cooperation with Harvard, Yerkes, and Mount Wilson observatories]

Date	Eastern standard civil time	Heliographic		Area [1]	
		Longitude	Latitude	Spot	Group
1927	*h. m.*	°	°		
Apr. 1 (Harvard)	13 36	−67.0	+14.0		409
		−35.0	+19.0	106	
		+32.0	−23.0		91
Apr. 2 (Harvard)	12 49	−73.0	+14.0		273
		−56.0	+15.0		500
		−51.0	−23.0	91	
		−21.0	+11.0	91	
		−21.0	−12.0		91
		+53.0	+11.0		212
Apr. 8 (Harvard)	9 52	−64.0	+14.0	182	
		−58.0	−16.0		121
		−52.0	−15.0		424
		−40.0	−13.0		288
		+24.0	+14.0		333
Apr. 9 (Harvard)	9 51	−51.0	+15.0		136
		−44.0	−15.0		106
		−37.0	−15.0		379
		−26.0	−12.0		318
		+37.0	+14.0		364
Apr. 13 (Harvard)	10 51	−2.0	−21.0		76
		+11.0	−16.0		364
		+26.0	−12.0		61
Apr. 25 (Harvard)	9 40	−78.0	+4.0	288	
		−31.0	−17.0		288
		−8.0	−21.0	76	
		+28.0	+24.0		106
Apr. 29 (Harvard)	16 49	−53.0	−22.0		106
		−19.0	+4.0	45	
		+26.0	−14.0		242
Apr. 30 (Harvard)	12 5	−16.0	−20.0		152
		−9.0	+4.0		136
		+36.0	−12.0	61	
May 1 (Naval Observatory)	11 48	−5.0	−19.5		108
		+6.5	+4.5		108
		+50.0	−14.0		31
May 2 (Naval Observatory)	11 45	−74.0	+10.0	123	
		+9.5	−19.5		216
		+19.5	+4.5		93
		+62.5	−13.5		46
May 3 (Naval Observatory)	11 48	−60.0	+10.0	77	
		−54.0	−16.0		62
		+22.5	−19.5		247
		+33.0	+4.5	45	
May 4 (Harvard)	9 24	−53.0	−3.0		50
		−48.0	+9.0	91	
		−41.0	−16.0		234
		−6.0	+22.0	49	
		+34.0	−19.0		484
		+43.0	+6.0		63
May 5 (Naval Observatory)	11 44	−38.5	−8.0		139
		−26.0	−16.5		201
		+26.0	+22.0		62
		+44.5	−23.0	19	
		+53.0	−18.9		247
May 6 (Harvard)	9 2	−28.0	−6.0		95
		−22.0	−10.0	83	
		−15.0	−16.0		385
		+35.0	+22.0	63	
		+86.0	−19.0		118
May 7 (Naval Observatory)	12 25	−10.0	−7.5		106
		+3.0	−14.5		216
		+14.0	+19.0		77
		+50.5	+23.5	15	
		+84.0	−18.0		247

[1] Areas are corrected for foreshortening and are expressed in millionths of sun's visible hemisphere.